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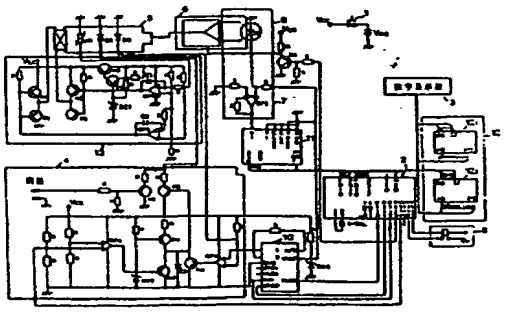
[54]发明名称 无创测量血糖浓度的方法和装置

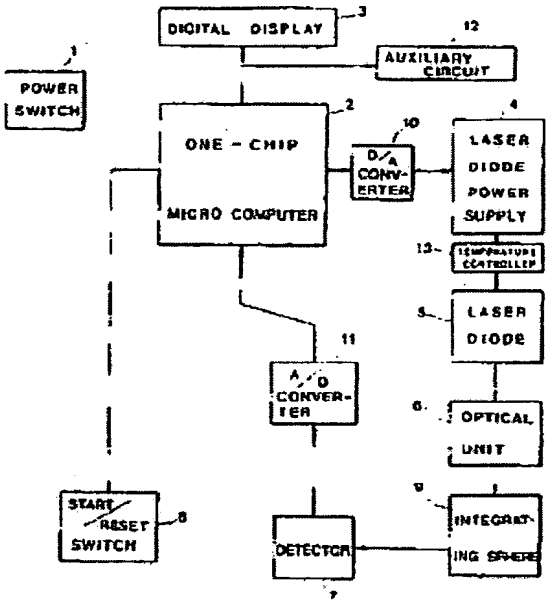
[57]摘要

无创测量血糖浓度的方法和装置。本发明使来自半导体二极管激光器的波长为1.3-1.9微米的电磁辐射线，通过皮肤传到血管。在那里光与血液中的不均匀成分相互作用，然后由血液漫反射。被反射的光将为血液主要成分的分子的特性振动所调制。该反射光被检测并以数字信号提供给单片微计算机。该单片微计算机根据该数字信号并参照储存在其存储器中的一条标定曲线算出血糖浓度。然后将该浓度值显示在数字显示器上。



A method and apparatus for measuring blood glucose concentration by irraditing blood vessels with electromagnetic radiation using near-infrared radiation diffuse-reflection laser spectroscopy. This invention uses electromagnetic radiation of a wavelength that is transmitted through the skin to the measurement part, for example, a blood vessel. Since skin is mostly composed of water (H2O), which absorbs IR radiation in nearly the entire IR spectral range, only radiation of a certain, narrow protion of the IR spectral range called the "water transmission window" is transmitted through the skin. The present invention uses electromagnetic radiation with a wavelength of 1.3 mu m SIMILAR 1.9 mu m radiation from a semiconductor diode laser (5). When electromagnetic radiation of these wavelengths irradiates the skin, light is transmitted through the skin to the blood vessel where the light interacts with the heterogeneous components of the blood. The light which reaches the blood is then diffusely reflected by the blood. The reflected light will have been modulated by the characteristic vibrations of the molecules which are major components of blood. The reflected light is detected and provided as a digital signal to a one-chip microcomputer (2). The one-chip microcomputer (2) calculates a blood glucose concentration from the digital signal by reference to a calibration curve stored in the memory of the one-chip microcomputer (2). The one-chip microcomputer (2) causes the calculated blood glucose concentration to be displayed on a

FIG.1.



digital display (3).

Non-invasive method and apparatus for measuring blood glucose concentration

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